

WHAT IS CLAIMED IS

1. A method for de-screening an image signal, the method comprising the operations of:

(a) determining a control signal to select a pair of filters from a bank of filters;

(b) filtering the image signal using the select pair of filters to produce a pair of filter output signals;

(c) generating at least one first control signal based on the image signal using a control module; and

(d) dynamically blending the pair of filter output signals in accordance with the first control signal to produce a de-screened output signal, using a blend module.

2. The method of Claim 1 wherein, in operation (a), the bank of filters comprises two-dimensional filters, each of the two-dimensional filters being separable into two one-dimensional filters.

3. The method of Claim 2 wherein each of the one-dimensional filters has a symmetric triangular shape with integer coefficients.

4. The method of Claim 3 wherein each of some of the one-dimensional filters has a total weight equal to a power-of-2 number, the total weight being the sum of respective coefficients.

5. The method of Claim 1 wherein, in operation (a), the bank of filters comprises lowpass filters having different cutoff frequencies to facilitate reduction of different halftone screen frequencies occurring within a predetermined range.

6. The method of Claim 1 wherein, in operation (a), a number of filters having different filter spans and cascaded in series with one of the filters having a large filter span in the array of filters to produce a super lowpass signal having lowest cutoff frequency.

7. The method of Claim 1 wherein operation (b) comprises the operations of:

(1) receiving, via a contrast module, a filter output signal from one of the filters having larger filter spans, and producing a contrast signal;

(2) receiving, via a screen estimate module, the image signal and producing an estimated frequency signal and a estimated frequency and magnitude signal; and

(3) receiving, via a pixel control module, the contrast signal from the contrast module and the estimated frequency and magnitude signal from the screen estimate module, and producing the first control signal, the first control signal including information regarding which of the filter output signals are to be blended and the proportion of blending.

8. The method of Claim 1 wherein operation (c) comprises:

receiving, via an interpolation unit included in the blend module, the filter output signals and the first control signal;

blending two signals selected from the filter output signals in accordance with the first control signal, via the interpolation unit; and

producing a blended output signal.

9. The method of Claim 8 wherein operation (c) further comprises:

receiving, via chrominance processing and un-sharped masked filter included in the blend module, the blended output signal from the interpolation unit and a second control signal from the control module;

filtering the blended output signal in accordance with the second control signal; and

producing a sharpened output signal.

10. The method of Claim 9 wherein operation (c) further comprises:

receiving, via a chroma control unit included in the blend module, the sharpened output signal from the unmask sharp filter and a third control signal from the control module;

adjusting chroma components included in the image signal in accordance with the third control signal; and

producing the de-screened output signal.

11. A system for de-screening an image signal, the system comprising:

(a) a pair of filters chosen from a bank of filters filtering the image signal and producing a set of filter output signals;

(b) a control module receiving the image signal and some of the filter output signals and generating at least one first control signal; and

(c) a blend module dynamically blending the filter output signals in accordance with the first control signal to produce a de-screened output signal.

12. The system of Claim 11 wherein the bank of filters comprises two-dimensional filters, each of the two-dimensional filters being separable into two one-dimensional filters.

13. The system of Claim 12 wherein each of the one-dimensional filters has a symmetric triangular shape with integer coefficients.

14. The system of Claim 13 wherein each of some of the one-dimensional filters has a total weight equal to a power-of-2 number, the total weight being the sum of respective coefficients.

15. The system of Claim 11 wherein the bank of filters comprises lowpass filters having different cutoff frequencies to facilitate reduction of different halftone screen frequencies occurring within a predetermined range.

16. The system of Claim 11 wherein the bank of filters includes an array of filters having different filter spans and an extra filter cascaded in series with one of the filters having a large filter span in the array of filters to produce a super lowpass signal having lowest cutoff frequency.

17. An article of manufacture comprising:

a machine usable medium having program code embedded therein, the program code comprising:

machine readable code to filter an image signal to produce a pair of filters from a set of filter output signals;

machine readable code to generate at least one control signal based on the image signal and some of the filter output signals; and

machine readable code to dynamically blend the filter output signals in accordance with the control signal to produce a de-screened output signal.

18. The article according to Claim 17 wherein the pair of filters comprises two-dimensional filters, each of the two-dimensional filters being separable into two one-dimensional filters.

19. The article according to Claim 18 wherein each of the one-dimensional filters has a symmetric triangular shape with integer coefficients.

20. The article according to Claim 19 wherein some of the one-dimensional filters has a total weight equal to a power-of-2 number, the total weight being the sum of respective coefficients.